

FLIGHT

The
AIRCRAFT
ENGINEER
&
AIRSHIPS

First Aero Weekly in the World

Founder and Editor: STANLEY SPOONER

A Journal devoted to the Interests, Practice, and Progress of Aerial Locomotion and Transport

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DIARY OF FORTHCOMING EVENTS

Club Secretaries and others desirous of announcing the dates of important fixtures are invited to send particulars for inclusion in the following list:

Feb. 20-22	Aero Club of France Grand Prix. 1st stage
Feb. 23 ...	Lecture, "Possible Developments in Aircraft Engines," by Lieut.-Col. H. T. Tizard, before Cambridge University Aë.S.
Mar. 3 ...	Lecture, "Airship Fabrics," by J. W. W. Dyer, before R.Aë.S.
Mar. 3 ...	Lecture, "Parachutes," by Maj. T. Orde-Lees, before R.Aë.S.
Mar. 9 ...	Lecture, "The Artificial Control of Weather," by Sir Napier Shaw, before Cambridge University Aë.S.
Mar. 17 ...	Lecture, "Flying Boat Construction," by Capt. D. Nicholson, before R.Aë.S.
Mar. 20-22	Aero Club of France Grand Prix. 2nd stage
April 13-20	Monaco Seaplane Meeting
April 20-22	Aero Club of France Grand Prix. 3rd stage

INDEX AND TITLE PAGE FOR VOL. XII.

The 8-page Index for Vol. XII of "FLIGHT" (January to December, 1920) is now ready, and can be obtained from the Publishers, 36, Great Queen Street, Kingsway, W.C. 2. Price 1/- per copy, post free.

EDITORIAL COMMENT



THE last week-end the names of the new Cabinet Ministers were made known. The only change which really interests us is that caused by the removal of Mr. Churchill to the Colonial Office and his replacement at the War Office by Sir L. Worthington-Evans. Of the latter we know very little, and therefore do not propose to comment upon his appointment. He may be everything that is admirable as titular head of the War Office, and doubtless the choice is the best the Prime Minister could have made in the circumstances. What does interest us very greatly is what is happening to the Air Ministry while all the changes are going on? Is there an Air Minister now? Or have the two appointments of War and Air been merged to such an extent that it is no longer necessary to mention the latter when a new Secretary for War is appointed? Is Mr. Churchill for the moment joint Secretary for the Colonies and Air?

As a matter of constitutional fact, it would seem that at the moment he is both. The official announcement to which reference has been made set forth that, among other similar appointments, His Majesty had been pleased to approve of Sir L. Worthington-Evans as Secretary for War. Not a word was said about the Secretaryship for Air. As the latter office was specifically created by Act of Parliament it has to be filled until Parliament itself repeals the Air Force Act, or so much of it as relates to the constitution of a separate Air Ministry. The present position of affairs gives rise to a feeling of acute uncertainty, and there is much speculation as to what is likely to happen. Obviously, Mr Churchill can hardly combine the Colonies and the Air, which are two interests so entirely separate and distinct that it would require a big stretch of imagination

* Since writing this leader just as we are at the press, the statement has been made that the Government have decided to re-establish the Air Ministry with a separate Secretary of State for the Air. Also that Mr. Churchill will retain temporarily the seals of office pending the actual appointment of the Air Minister. General Seely is the most likely candidate for the post, which will be welcomed by the friends of aviation if he takes office with a firm hand, having regard to his fearlessly expressed views upon the vital importance of seeing that the British Empire is supreme in the Air.

to visualise a single Minister controlling the two. It is true that the combination might lead to a forward air policy in our Colonies, but this is only one aspect of the office. Therefore, we are driven back upon another line of speculation altogether.

Can it be that the failure to fill the post of Air Minister presages an attempt to wipe out this office as a separate Secretaryship of State and that, pending the submission to Parliament of the necessary legislation, Mr. Churchill is to continue nominally to fill it? We can hardly think that this is so. We are too close to the War and all its lessons to believe that the Government can intend anything of the sort. Still, it will pay to keep a very close watch upon events, lest Parliament and the country should be caught napping and we should awake one day to find the Air Ministry among the things of the past.

A Disquieting Suggestion

In connection with the discussions which have arisen in consequence of the recent Cabinet changes, one of the Sunday papers—the *Sunday Times*, which is usually well-informed—throws out a very disquieting hint. It sets forth that at the end of last session there was a pretty strong feeling in favour of abolishing the separate Air Ministry, and though there will be no restoring separate naval and military air forces, it would not be in the least surprising if it were merged in the Ministry of Transport. “At any rate,” says our contemporary, “the idea is being ventilated, and it is one cause of the delay in making the remaining appointments (to the Cabinet). *Mr. Lloyd George wants to save Sir Eric Geddes if he can.*”

The italics are our own. We believe we are right in saying that when the Ministry of Transport was being discussed, the present Minister would have been much more satisfied with himself and his new job if he had had the “co-ordination” of all transport, including that by air, placed under his fostering care. He got most of his way, but it was made clear to him that he could not have the air—even though he did succeed in getting the earth—without a more strenuous fight than the Government was prepared to face at the time. It would appear that there is more than slight reason to suspect that Sir Eric Geddes is now turning covetous eyes on the air, and would like to rehabilitate his somewhat shorn Ministry by taking over administration of its affairs. Heaven save us from any such fate! We have seen how the Ministry of Transport has thrown railway administration into worse chaos than existed before it assumed control. We have recently seen to what length it will go in its attempt to drive motor transport off the highways—for that is what its new scheme of motor taxation amounts too. We have seen how little it will allow the well-being of any trade or industry to stand in the way of its grandiose schemes. In short, we have seen enough of its methods to make us certain that no worse fate could befall aviation, civil or military, than to be placed under the heel of this Ministry of super-men—which seems to be another name for muddlers. If the intention to dispose of the Air Ministry in this fashion is in fact present, it must be fought tooth and nail. No more certain way of killing aviation altogether could be devised than to make it a mere department of this useless section of the new bureaucracy.

Why, we wonder, the sinister suggestion that the Prime Minister wants to save Sir Eric Geddes? Save him from what? From having to find a civilian job in which he would have to earn his money? Or from going into the City to lose the £50,000 he was paid by the North-Eastern Railway Co.? We do not like these suggestions of political “wangling.” They are too suggestive of the methods of the present Government as we have got to know them.

The Future of Research

Elsewhere in this issue will be found brief notes dealing with the latest, and last, Report of the Advisory Committee for Aeronautics, for the year 1919-20. With the matter contained in this report we need not deal here. A perusal of the report, however, must result in a realisation of the immense value of the work that has been carried out during the last few years, and in this connection we cannot refrain from a word of warning as to the future. Under the plea of economy the aviation industry has already been allowed to dwindle into wholly insignificant proportions. That is bad enough in all conscience, but it is realised that it was almost inevitable that an industry which was mainly a result of war conditions could not be maintained on such a scale after the War. With regard to research, however, one fears that there may be the same tendency to exercise rigid economy as that which has been applied to the industry. We should like to have an assurance that this is not so, for nothing could well be a more short-sighted policy than to withdraw financial support from the incalculably valuable research work done by such institutions as the National Physical Laboratory and the Royal Aircraft Establishment. Other countries are forging ahead, our late enemies no less than our Allies, and the present time, when comparatively few experiments are required for the immediate use of manufacturers or of the Service, would appear to be most favourable for a resumption of those researches of a more general character which had to be abandoned owing to the exigencies of the War.

First and foremost among these, as far as wind tunnel experiments and full scale tests are concerned, are the problems connected with stability. One result of the work done during the War has been that the question of performance has been reduced, broadly, to a simple curve of loading per horse-power. While it may at first sight appear extremely unlikely that the very complicated problems of stability could ever be reduced to such simple proportions, we have it as the considered opinion of at least one aerodynamic expert of world-wide reputation that ultimately it should be possible to evolve a formula for stability almost as simple as that of load per horse-power is for performance. Before this can be accomplished, however, an immense amount of research and experiment must be done, and in this connection we would urge that a large proportion of the wind channels at the N.P.L. and R.A.E. should be turned on to this class of work exclusively. Such comparatively simple experiments as wind channel tests on models of aerofoils, struts, wires, undercarriages, etc., can be done in the several minor establishments now existing in various parts of the country. A good many constructors now have their own wind channels where work of this kind

The Camera and the 'Plane



The ruins of Ypres, photographed from a Handley Page aeroplane conveying passengers and freight on the London-Brussels Air-Service.

can be done quite satisfactorily. When it comes to work of such magnitude as that involved in determining rotary derivatives, however, the task becomes very heavy for any private firm or small laboratory, and we would strongly urge that the present affords an excellent opportunity for our great establishments at Teddington and Farnborough to push ahead with work of this description. When commercial aviation really begins to go ahead, as it undoubtedly will very soon, the results of such work would be of inestimable value.

"The best hope for the future of Aeronautics, whether in its uses for commercial and civil purposes or for defence, lies in the continued development and extension of research. There is a wide field to be explored—as yet we have scarcely advanced beyond the border line—and no one can say what possibilities lie hidden in the unknown country beyond. But already we can see far enough to be assured that its exploration is of immense importance for future civilisation, and that no effort should be spared in carrying forward the work."

This sentence, quoted from the last report of the Advisory Committee, we can heartily endorse, and it behoves us to see to it that no sense of false economy is allowed to hamper the work in the immediate future of those responsible for aeronautical research.

The Thames as an Air Port

The alighting experiments on the Thames, which we were able to illustrate last week, mark what may be a most important development in the history of civil aviation in this country. We say may be advisedly, since the present situation is by no means reassuring and we are at a stage when literally anything may happen. The Air Ministry has for some time taken the view that development of the civil side of the movement is being hindered by the distance of suitable aerodromes from the centres of population. So far as London is concerned the obvious solution of the undoubtedly important question involved is to be

found in the Thames, provided the river can be used as an air-port without prejudicing the public safety or interfering with riverine traffic. With this in view, a detailed survey of the river, from the Nore upwards, has been made and, in consequence, the stretch between Westminster and the Albert Bridge selected as the most suitable for "landing" machines of the amphibian type.

The Board of Trade, the Port of London Authority, and the Commissioner of Police, were called into consultation and arrangements were made to demonstrate to these authorities the ease and safety with which amphibian aircraft can be manoeuvred in crowded waters. Hence the experimental landings of last week. These so far have been quite successful, but the intention is to carry out further experiments with a view to reaching a decision as to whether the use of this area by commercial aircraft can be arranged. Obviously, landings made under any single set of conditions are insufficient for the purpose and it will be necessary to test the possibilities under all sorts of variations of wind, weather and tide.

There seems to be no good reason to think that these further experiments will result in any other way than to demonstrate that the practical difficulties are comparatively slight and that they will have a considerable bearing on the future of aerial transport between London and other parts. The fact that existing aerodromes are situated at a considerable distance outside London itself is in some directions an obvious hindrance to expansion. The time occupied in reaching Waddon or Cricklewood is a serious addition to the total time of transit, apart from the inconvenience entailed by the change of transport between the terminal air-port and the actual destination. If the cross-Channel passenger could step right on board an aircraft at Westminster and be "landed" on the Seine in the middle of Paris, for example, it would clearly encourage travel by air to an extent which is but imperfectly realised. We have great hopes that the Air Ministry experiments will be productive of a great deal of good to development.

REPORT OF IMPORTS AND EXPORTS BY AIR

THE following summary and figures have been issued by the Air Ministry:—

The value of imports and exports by air during 1920 exceeded the million pounds' mark, the respective amounts being £677,047 and £339,108, and the grand total £1,016,155.

For the last quarter of the year (October–December) the value of imports and exports conveyed by aircraft were approximately four times greater than for the same period of 1919, although there was a reduction in traffic for the month of December as compared with the preceding months.

The principal classes of merchandise carried during the year were clothes and furs. Among the imports the largest

item was one of about £307,500 for women's outer clothing brought from France. Fur goods amounting to about £78,000 were also carried from France. In the export trade different classes of goods dealt with were more evenly represented. One of the chief items was men's and boy's woollen clothing, etc., to the value of about £27,700.

Among other goods forwarded were matches, electric lamp parts, wireless apparatus, human hair, paintings and cinematograph films.

Exports by Air

Imports by Air

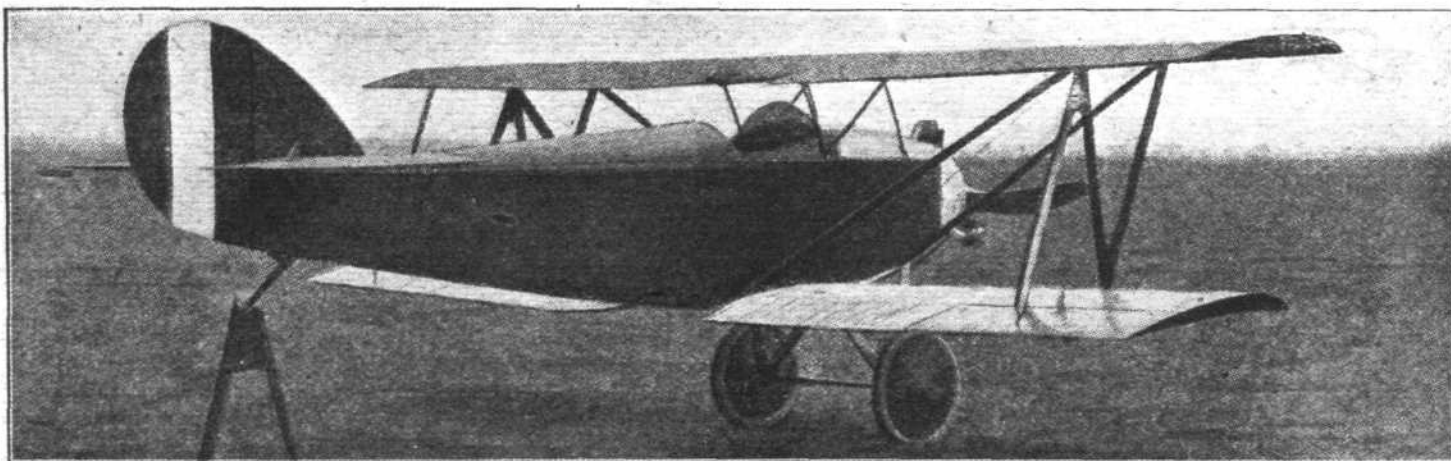
From.	Free.			Dutiable.		
	Dec.,	Oct.-	Oct.-	Dec.,	Oct.-	Oct.-
	1920.	Dec.,	Dec.,	1920.	Dec.,	Dec.,
		1919.	1920.		1919.	1920.
Belgium ..	559	176	1,718	1	2	20
France ..	46,618	51,796	209,769	3,952	3,357	11,425
Germany ..	—	—	9	—	—	3
Italy ..	—	—	—	560	6	652
Netherlands ..	—	—	227	—	1	7
Switzerland ..	—	—	—	142	—	334
Total ..	47,177	51,972	211,723	4,655	3,366	12,441

To.	British Exports			Re-exports.		
	Dec.,	Oct.-	Oct.-	Dec.,	Oct.-	Oct.-
	1920.	Dec.,	Dec.,	1920.	Dec.,	Dec.,
		1919.	1920.		1919.	1920.
Belgium ..	482	9,582	8,829	51	—	828
Denmark ..	—	—	957	—	—	—
France ..	19,241	16,112	80,109	11,362	2,400	35,536
Germany ..	4	—	22	—	—	—
Italy ..	—	1	—	—	—	—
Morocco ..	—	—	5	—	—	—
Netherlands ..	288	—	10,294	—	—	4,649
Sweden ..	—	—	2	—	—	—
Spain ..	—	—	3	—	—	—
Switzerland ..	61	—	86	—	—	—
Total ..	20,076	25,695	100,307	11,413	2,400	41,013

THE SPERRY "MESSENGER" BIPLANE

ONE of the uses—and quite an important one, we think—to which the aeroplane can be put on the military side, is that of dispatch carrying, work usually done by motorcycles. The advantages of the former over the latter are obvious, not only in the matter of speed, but on account of the aeroplane being independent of roads. If the machine is designed so that it is small, easily dismantled and assembled, and has a low landing speed without sacrificing performance, then one can also be more or less independent of aerodromes. The Engineering Division of the U.S. Air

N-form interplane struts on each side connect upper and lower wings, both of which are set at a dihedral angle of about $1\frac{1}{2}$ degs. The wings are of good design and construction, special care having been taken to produce wings which were strong and simple in construction, as well as being capable of quick assembly on the field. There is but one lift wire—from the front lower wing-spar root to the top of the rear interplane strut member—the rest of the flying and landing loads being taken up by the steel struts. After the machine has once been assembled and the proper length



THE SPERRY "MESSENGER" BIPLANE : Three-quarter rear view.

Service designed such a machine as outlined above, specially for dispatch carrying, the following brief particulars of which are given in our American contemporary, *Aviation*.

This machine, which was built by the Lawrence Sperry Aircraft Co., Inc., of Long Is., N.Y., is a single-seater rigid truss tractor biplane of pleasing appearance. Incidentally, it possesses all the characteristics that make for a successful "Sportplane," and is not, therefore, a machine for military work only. The Lawrence 60 h.p. three-cylinder air-cooled engine, with which it is fitted, neatly blends into the nicely streamlined fuselage of plywood, leaving only the cylinders exposed to the air, while the streamline tubular truss bracing and struts all offer the minimum of head resistance.

The wings, ailerons and tail surfaces are easily detachable, and many of the parts are interchangeable, as, for instance,

found for the struts, it can be reassembled in a few minutes without repeated adjustments.

The main spars are of channelled spruce, and the ribs are built up of mahogany webs, with spruce cap strips. The wings were sand tested at McCook Field, standing a factor of safety of seven without failing. They were also tested for inverted flight to an F.S. of four without failure.

The fuselage is of usual longeron and diagonal strut type, covered with three-ply mahogany. The pilot's cockpit is roomy and neatly upholstered. A large instrument board with a complete set of instruments, including two tachometers, altimeter, compass, oil gauge, clock, and engine switch, is mounted conveniently in the cockpit. The deck fairing and wind-shield in front of the pilot are so arranged that, while giving a good view, it deflects the air from the pilot's face,

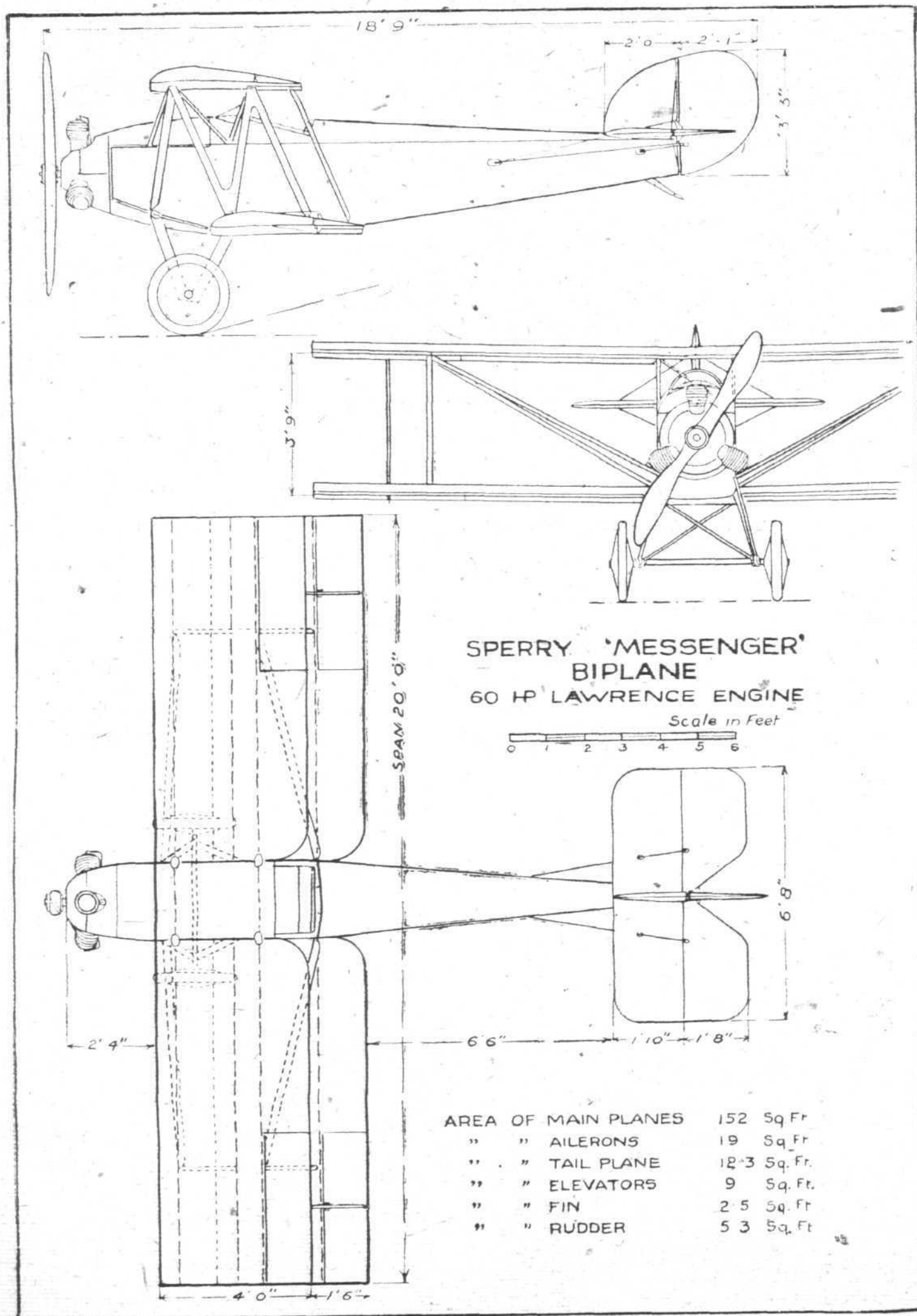


THE SPERRY "MESSENGER" BIPLANE : Three-quarter front view.

such parts as the upper and lower wings, and the ailerons. Structurally the machine differs slightly from standard practice, which difference is principally in the rigid type of wing trussing, made of round steel tubing streamlined with balsa wood. The upper wings are attached to a small centre section panel, the width of the fuselage, mounted above the latter on a pair of N-struts. The lower wings are attached direct to the bottom longerons of the fuselage. One pair of

making it unnecessary to wear goggles. The controls are of the standard stick and rudder bar type.

The 60 h.p. Lawrence air-cooled engine fitted to this machine has given wonderful results on several tests carried out by the Government. It ran through the standard 50-hr. test without the slightest indication of trouble or wear. The engine is supported by two steel plates on either side, which are bolted to the fuselage nose veneer panel, giving a



THE SPERRY "MESSENGER" BIPLANE: Plan, side and front elevations to scale.

strong and flexible mounting. The petrol tank is built in two compartments, the lower or main tank containing 6.7 gals., and the upper or auxiliary tank containing 3.3 gals., a total capacity sufficient for 2 hrs.

The Sperry "Messenger" has been through a number of wind-tunnel tests, and the best stabiliser setting was determined, with the result that very satisfactory longitudinal stability was obtained. The stability of the machine is reported to be good under both high and low speeds, and the difference can hardly be felt on the control stick under these two conditions. It is said that the controllability is remarkable on all three controls, and without the tendency to act too quickly. In this respect it is comparable to the S.E.-5, while the manoeuvrability is likened to that of the Nieuport (French). It is interesting to note that the performance of this machine, with only 60 h.p. and a wing curve—U.S.A. 15—which was designed for high lift while sacrificing added resistance at high speed has as good, if not better, a performance than most machines having the same loading/sq. ft. and/h.p.

The principal characteristics of the Sperry "Messenger" are:—

Span	20 ft. 0 ins.
Chord	4 ft. 0 ins.
Over-all length	18 ft. 9 ins.
Height	7 ft. 0 ins.
Gap	3 ft. 9 ins.
Stagger	1 ft. 6 ins.
Area of main planes	152 sq. ft.
Area of ailerons (4)	19 sq. ft.
Area of tail plane	12.3 sq. ft.
Area of elevators	9 sq. ft.
Area of fin	2.5 sq. ft.
Area of rudder	5.3 sq. ft.
Weight, empty	581 lbs.
Weight, loaded	820 lbs.
Loading/sq. ft.	5.4 lbs.
Loading/h.p.	13.5 lbs.
Speed range	35-95 m.p.h.
Climb in 10 mins.	10,000 sq. ft.

AUSTRALIA CREATES AN AIR COUNCIL AND AIR BOARD

AN Air Council and subordinate Air Board have been created as from November 9, 1920, to control aviation in Australia.

In dealing with the subject in the Australian Parliament, on behalf of the Government, Senator Pearce pointed out that the Government's endeavour was to devise an effective means of ensuring the full consideration of matters of aviation policy, as a whole, in its naval, military and civil aspects. A vote of £100,000 was to be earmarked for purely civil aviation purposes, and the civil aviation policy was to be co-ordinated with the defence aspects of aviation in every sense of the word. Moreover, the permanent section of the Air Force, he said, is to be used in assisting civil aviation to get on a proper basis. The personnel of the Air Force will be used very largely for surveying, map-making and doing the necessary pioneering work in arranging air routes in Australia, which will eventually be utilised for commercial purposes. It was obvious, Senator Pearce said, that if commercial firms are to enter into the work of civil aviation and at the same time are to be asked to map out the routes, prepare surveys, depôts and landing-places, these undertakings would be overloaded and would prevent commercial aviation from being successfully undertaken.

In fact the Australian scheme would seem to be that, in addition all the military depôts should be equally open to commercial firms, thereby lessening the cost to them of establishing themselves and helping them more speedily to take up the work.

The real expenditure voted was £600,000 for aviation, including £500,000 for military aviation, but in the first year it would be directed along lines mainly to help commercial aviation as outlined above, although simultaneously and automatically this would assist the necessary work of military character. In regard to the carrying of mails, Senator Pearce said that the ordinary procedure was that the Postal Department called for tenders for the carrying of mails. It would be farcical, he maintained, to call for tenders for carrying mails by air to any part in Australia, as the firms engaged in the work of aviation had no data on which to base tenders. The Department, therefore, had asked the Postal Department to work in conjunction with the Defence Department, for several months, and to carry mails over certain routes.

By keeping a correct record of the expenditure incurred, the Postal Department would thus have information on which to work, and would be in a position to give some indication of the cost, thus enabling outside firms to tender, if they so desired, for carrying mails.

It will thus be seen that the Australian Government is fully alive to the huge possibilities of aviation, especially in their own country, and we welcome the splendid support which apparently is being given overseas to the development of commercial aviation as a feeder to the military side, which at the moment is in striking contrast to the policy adopted in this country.

"R.80" Takes the Air Again.

ON February 9 speed trials took place from Messrs. Vickers' Barrow works of "R.80." At first a six-hours' test was contemplated, but owing to fog it was not deemed advisable to get her out of the shed, and when it cleared in the afternoon a two hours' trial was decided upon. There was a light wind from the north. The work of getting her out of the shed was safely carried out in two minutes, following which there was an hour's halt for engine testing before she finally got away on her trials.

With two after engines working she was headed away towards Cumberland, and then the big forward engine was started. She rose slowly, steering towards Black Combe, but turned out towards the Irish Sea, and after a short run level with the land she circled round to Barrow, and, making a higher altitude, her speed increased greatly, and she raced away inland. A trip was taken towards Morecambe Bay and out to sea. A series of smart runs was then made over land and sea. Finally, after making a circle of Furness, she returned to her hangar.

This fine airship, which is destined for America, is in command of Capt. J. C. Little, who has watched her construction throughout.

On Thursday "R.80" was out again. After slight delay in the morning, again owing to fog, the ship made a flight covering several hours. Those on board included Air-Commander Maitland, and representatives of the Air Ministry and Messrs. Vickers. The ship reached a much greater height than on her first trip, travelled at a high speed, and covered a great distance, both out to sea and over land, being throughout splendidly handled.

Altogether "R.80" has completely justified herself and has been taken over by the Air Ministry, and in due course

she will no doubt be transferred to the hands of the representative of the United States. Sixty m.p.h. is the speed given for this craft.

The Commercial Grand Prix

CONTRARY to expectation, it is now quite possible that at least one entrant for the above will try his luck on the first of the three-day periods, viz., February 20, as MM. F. d'Or and Jean Bernard tentatively propose, subject to the weather not being entirely unsuitable, to make the running with the Farman machine. They propose to start between nine and ten at night from Bourget on Sunday, February 20, and to go through with the attempt to cover the 2,400 kilometres without a break other than the necessary landings. If they are successful under all the conditions, a very great step forward will be registered, having regard to the many hours of night-flying which will be necessary under the circumstances. M. d'Or is the chief Farman pilot, where he has been operating for the past nine years, and M. Bernard holds with M. Bossoutrot the record for duration and distance.

Aviation at the Efficiency Exhibition

In the programme of the *Daily Mail* Efficiency Exhibition at Olympia, the Higher Production Council have arranged a series of conferences. Amongst these is one on February 25 dealing with aerial transport, in which the Royal Aeronautical Society, the Aerial League, Aero Club and the Society of British Aircraft Constructors are kindly co-operating. The chair will be taken by Maj. Sir J. L. Baird, Bart., M.P., and papers will be read on "Aeroplane and Seaplane Transport" and "Airship Transport." It is hoped that these will be followed by an interesting and useful discussion.

The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

ANNUAL GENERAL MEETING

The Annual General Meeting of the Members of the Royal Aero Club of the United Kingdom will be held on Wednesday, March 30, 1921, at 3, Clifford Street, New Bond Street, London, W.1, at 6 p.m.

Notices of Motion for the Annual General Meeting must be received by the Secretary not less than twenty-one days before the Meeting, and must be signed by at least five Members.

Committee

In accordance with the Rules, the Committee shall consist of 18 Members. Members are elected to serve for two years, half the Committee retiring annually.

Retiring Members are eligible for re-election.

The retiring Members of the Committee are:—

Lieut.-Col. John D. Dunville.
Lieut.-Col. Spenser D. A. Grey, D.S.O.
Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S.
Squadron-Leader T. O'B. Hubbard, M.C., R.A.F.
Lieut.-Col. F. K. McClean.
Air-Commodore E. M. Maitland, C.M.G., D.S.O., R.A.F.
The Viscount Northcliffe.
Lieut.-Col. Alec Ogilvie.
F. Handley Page.

Any two Members of the Club can nominate a Member to serve on the Committee, provided the consent of the Member has been previously obtained. The name of the Member thus nominated, with the name of his proposer and seconder, must be sent in writing to the Secretary not less than fourteen days before the Annual General Meeting.

FLYING SERVICES FUND COMMITTEE

A Meeting of the Flying Services Fund Committee was held on Friday, January 28, 1921, when there were present: Group-Capt. C. R. Samson, C.M.G., D.S.O., R.A.F., in the Chair, Mr. Chester Fox, Squadron-Leader T. O'B. Hubbard, M.C., R.A.F., and the Secretary.

Applications for Assistance.—Forty-six applications for assistance were considered and Grants and Allowances were voted amounting to £611 18s. 3d.

RACING COMMITTEE

A Meeting of the Racing Committee was held on Wednesday, February 2, 1921, when there were present: Maj.-Gen. Sir Sefton Brancker, K.C.B., in the Chair, Col. F. Lindsay Lloyd, C.M.G., C.B.E.

The following attended by invitation: Capt. H. E. P. D. Acland (Messrs. Vickers, Ltd.), Commander James Bird (Supermarine Aviation Works, Ltd.), Mr. E. B. Parker (Messrs. Short Bros.), Mr. Rhodes (Blackburn Aeroplane and Motor Co.), Mr. O. E. Simmonds (Cambridge University Aeronautical Society), Harold E. Perrin, Secretary.

Schneider Cup, 1921.—The regulations for the Race for 1921 were reported.

The question of the Club making a grant towards the expenses of the British Competitors was discussed and referred to the Club Committee.

British Seaplane Races.—It was decided not to proceed with the proposed Seaplane Circuit of Great Britain, but to endeavour to arrange a series of races at Cowes during August.

COMMITTEE MEETING

A Meeting of The Committee was held on Wednesday, February 9, 1921, when there were present: Brig.-Gen. Sir Capel Holden, K.C.B., F.R.S., in the Chair; Maj.-Gen. Sir Sefton Brancker, K.C.B.; Mr. Ernest C. Bucknall; Col. F. Lindsay Lloyd, C.M.G., C.B.E.; Lieut.-Col. Alec Ogilvie; Lieut.-Col. Mervyn O'Gorman, C.B.; Group-Capt. C. R. Samson, C.M.G., D.S.O., R.A.F.; and the Secretary.

Election of Members.—The following New Members were elected:—

Ernest Allen.
William Karl Arnott.
Ernest Basil Kelsey.
William John Ley (Late Lieut. R.A.F.).
Luigi Mapelli di Pietro.

Sub-Committees.—Reports from the following Sub-Committees were received and adopted: Racing Committee, Finance Committee, Flying Services Fund Committee.

Aviators' Certificates.—The following Aviators' Certificates were granted:—

7909. Joseph Louis Mazzucco.
7910. Charles Clinton Briggs.
7911. Henry George Crowe, M.C.

INTERNATIONAL MICHELIN CUP

(Open to all Countries affiliated to the F.A.I.) under the Regulations of the F.A.I.

20,000 francs per annum for eight years
(Total 160,000 francs)

GENERAL REGULATIONS

Messrs. A. and E. Michelin have entrusted to the Aero Club de France the drawing up of the Regulations which will be revised each year according to the importance of the progress made. These Regulations must be ratified by Messrs. Michelin.

ART. 1.—Each year, before January 1, the Regulations will be forwarded by the Aero Club de France to all Federations or Clubs affiliated to the F.A.I.

ART. 2.—The winner of the Cup, each year, will be the pilot of the aircraft which, at the expiration of the year in question, is the holder of the record, in accordance with the Regulations for the year in question.

No one may compete who is not a Member of the Club (federated or affiliated) of the country in which the attempt is made.

ART. 3.—The record, to be valid, must have been ratified by the Federation or Club controlling aeronautical sport in each country, in accordance with the Statutes and Regulations of the F.A.I.

The tests will be controlled in each country by the Aviation Commission of the Club recognised by the Federation.

ART. 4.—The winner of the Cup each year will receive, in addition to a replica in bronze of the objet d'art of the value of 10,000 francs (which constitutes the Cup), a sum of 20,000 francs, which will be awarded within thirty days of the ratification of his record.

ART. 5.—Each year a similar replica will be forwarded to the federated Club of the country in which the record has been established provided the Club does not already possess a replica.

The original will be awarded to the Club finally holding the Cup.

ART. 6.—If the Cup is not won in any one year, the amount of the prize will be added to the 20,000 francs for the following year, and so on.

Regulations for 1921—Tour de France Prize

ART. 1.—In accordance with Art. 4 of the General Regulations, the Michelin Cup, 1921, will be endowed with a sum of 20,000 francs.

The holder of the Cup for 1921 will be the pilot of an aircraft, Class C (flying machine), who, before January 1, 1922, has covered at the greatest commercial speed per hour, a course in a closed circuit of about 3,000 kilometres; in accordance with the present Regulations.

A diploma and a replica of the Michelin Cup by Moreau-Vauthier will also be awarded to each competitor who properly completes the course.

ART. 2.—For the tests carried out under the control of the Aero Club de France, the closed circuit, called the Tour de France, will include fifteen landings, to be made on each of the landing grounds of the following towns:—

Versailles (Buc, Chateaufort, Saint-Cyr or Villacoublay), Amiens, Chalons, Saint-Dizier, Gray, Joigny, Beaune, Vienne, Nîmes, Pau, Saint-Andre de Cubzac, Romorantin, Angers, Evreux, Saint-Inglevert (eight kilometres from Calais), and Versailles (Buc, Chateaufort, Saint-Cyr or Villacoublay).

The landings must be made in the above order, but flights may be started and completed at any one of the points indicated.

The landings will be verified by a log book which will be forwarded to each competitor on entering. On arriving at

a landing place the competitor's log book will be signed by an official or by two witnesses of the landing. The pilot may be required to produce his pilot's certificate at each landing.

ART. 3.—The commercial speed* over the whole of the closed circuit must be at least 75 kms. per hour.

ART. 4.—Intermediate landings, replenishments and repairs are allowed. Changing the aircraft is not permitted. The crankcase and the cylinders of the motor will be sealed or stamped. Towing is only allowed at walking pace.

ART. 5.—The entry form signed by the pilot must reach the Club organising the contest two days before the day of starting, before 6 p.m.†

It must indicate the point of departure that has been selected, and the day of starting.

The entry fee, which is not returnable, is 100 francs for the pilot's first entry, and 25 francs for subsequent entries during the year.

The entry is valid for starting during four consecutive days, the first of these four days being the day indicated on the entry form.

During these four days the pilot may make as many starts as he likes, provided the starts are made from the place indicated on the entry form.

ART. 6.—When the tests are not carried out in France, the closed circuit must consist of at least 3,000 kms. and there must be at least fifteen compulsory landing places.

The circuit established under these conditions, with an outline and difficulties similar to those of the French circuit, must be submitted for the approval of the Aero Club de France. The landing points must be marked on a map to be attached to the request for the approval of the circuit.

The contest must be carried out under the control of officials appointed by the Aero Club interested, together with an official timekeeper.

Successive Holders of the Cup

1st year, 1908: WILBUR WRIGHT, 124 kil. 700 in 2 hrs. 20 mins 31 secs. (Le Mans), December 31, 1908.

2nd year, 1909: HENRY FARMAN, 234 kil. 212 in 4 hrs. 19 mins. 32½ secs. (Camp de Chalons), November 3, 1909.

3rd year, 1910: MAURICE TABUTEAU, 582 kil. 935 in 7 hrs. 48 mins 31½ secs. (Buc), December 30, 1910.

4th year, 1911: EMMANUEL HELEN, 1,252 kil. 800 (Gidy-Lhumery), September 8, 1911.

5th year, 1912: Not contested.

6th year, 1913: EMMANUEL HELEN, 16,126 kil. 800 (Etampes-Cercottes), October 31 to November 29, 1913.

7th year, 1914: EUGENE GILBERT, 3,000 kil. (Tour de France), June 8/9, in 39 hrs. 35 mins. 42 secs.

Anyone wishing to compete for this Cup in England should communicate with the Secretary, Royal Aero Club.

* The commercial speed is arrived at by dividing the total length of the course by the time which elapses between the departure of the aircraft from its starting point and its return to the same point.

† Sundays and holidays are not included. Entries may not be received on Sundays or holidays.

3, Clifford Street, London, W.1, when a course will be arranged.

INTERNATIONAL SEAPLANE RACE

The Royal Aero Club has decided to contribute £1,000 towards the expenses of the British representatives competing in the International Seaplane Competition for the Jacques Schneider Trophy to be held in Venice in September.

Italy is the present holder and each Country is entitled to challenge with three Competitors. The Royal Aero Club will select the three Competitors to represent Great Britain, and all enquiries should be addressed to the Secretary.

GORDON BENNETT INTERNATIONAL BALLOON RACE, 1921

The International Gordon Bennett Balloon Race will be held this year at Brussels in September next.

The British Competitors will be selected by the Royal Aero Club, and anyone wishing to compete should communicate at once with the Secretary.

THE FLYING SERVICES FUND

(Registered under the War Charities Act, 1916)

Administered by the Royal Aero Club

For the benefit of Officers, Non-Commissioned Officers and Men of the ROYAL AIR FORCE who are incapacitated while on duty, and for the widows and dependants of those who are killed or die from injuries or illness contracted while on duty.

Honorary Treasurer:

The Right Hon. LORD KINNAIRD.

Committee:

H.R.H. THE DUKE OF YORK, K.G. (Chairman).

Lieut.-Col. A. DORE, D.S.O.

Mr. CHESTER FOX.

Squad.-Leader T. O'B. HUBBARD, M.C., R.A.F.

Group-Capt. C. R. SAMSON, C.M.G., D.S.O., R.A.F.

Secretary:

H. E. PERRIN.

Bankers:

Messrs. BARCLAYS BANK, LTD., 4, Pall Mall East, London, S.W. 1.

Subscriptions

	£	s.	d.
Total Subscriptions received to January 17, 1921	17,183	12	7
Rev. S. A. Norris Huntly (per Rev. R. E. Vernon-Hanson, Deputy Chaplain-in-Chief, R.A.F.)	0	10	6

Total, February 11, 1921 .. 17,184 3 1

Offices: THE ROYAL AERO CLUB,
3, CLIFFORD STREET, LONDON, W. 1.

H. E. PERRIN, Secretary.

THE LONDON-CONTINENTAL SERVICES

FLIGHTS BETWEEN JANUARY 30 AND FEBRUARY 12, INCLUSIVE

Route†	No. of flights*	No. of passengers	No. of flights carrying		No. of journeys completed†	Average flying time	Fastest time made by	Type and No. (in brackets) of Machines Flying
			Mails	Goods				
Croydon-Paris ...	10	3	1	5	8	2 45	Spad F-CMAY (2h. 15m.) ...	B. (3), G. (2), Sa. (1), Sp. (2).
Paris-Croydon ...	9	10	5	7	8	2 40	Spad F-CMAY (2h. 17m.) ...	B. (3), G. (2), Sa. (1), Sp. (2).
Cricklewood-Paris ...	7	25	5	5	4	2 29	Airco 9 G-EAUI (2h. 18m.)	A.9 (2), H.P. (2).
Paris-Cricklewood ...	3	8	2	1	3	3 10	Airco 9 G-EATA (2h. 35m.)	A.9 (2), H.P. (1).
Croydon-Brussels ...	5	2	2	3	4	2 40	Airco 4 O-BADO (2h. 23m.)	A.4 (3), A.9 (2).
Brussels-Croydon ...	6	—	6	5	4	2 49	Airco 9 G-EATA (2h. 20m.)	A.4 (3), A.9 (2).
Totals for two weeks...	40	48	21	26	31			

* Not including "private" flights.

† Including certain journeys when stops were made *en route*.

‡ Including certain diverted journeys.

A.4 = Airco 4. A.9 = Airco 9 (etc.). Av. = Avro. B. = Breguet. Br. = Bristol. Bt. = B.A.T.
F. = Fokker. Fa. = Farman F.50. G. = Goliath Farman. H.P. = Handley Page. N. = Nieuport. P. = Potez.
Sa. = Salmson. Se. = S.E. 5. Sp. = Spad. V. = Vickers Vimy. W. = Westland.

The following is a list of firms running services between London and Paris, Brussels, etc., etc.:—Air Post of Banks; Co. des Grandes Expresses Aériennes; Handley Page Transport, Ltd.; Instone Air Line; Koninklijke Luchtvaart Maatschappij; Messageries Aériennes; Syndicat National pour l'Étude des Transports Aériens; Co. Transaérienne.

ADVISORY COMMITTEE REPORT FOR 1919-20

In the years before the War it was customary to publish annually the reports of the Advisory Committee for Aeronautics, and dissatisfaction was often expressed on account of the long delay before the reports of wind tunnel tests became available. Since the armistice a different procedure has been followed, *i.e.*, each report has been issued as a separate booklet, thus saving valuable time. Lists of these reports (Reports and Memoranda) have been published in *FLIGHT* from time to time. In consequence of the new procedure the latest report of the Advisory Committee for Aeronautics for the year 1919-20, which has just been issued as a white paper, does not contain the actual technical reports, but merely a broad outline of the work which is described in detail in the Reports and Memoranda, etc. Incidentally this is the last report of the Advisory Committee as at present constituted, its work in the future being delegated to the Aeronautical Research Committee, of which Sir Richard Glazebrook is chairman.

A perusal of the report brings out little that is new to those who have read the Reports and Memoranda series now published by the Stationery Office. A few items in the report may, however, be of interest to readers of this journal. For instance, it is not, we think, generally known that there exists at the Royal Aircraft Establishment at Farnborough a complete installation capable of carrying out tests on aircraft engines of all sizes up to 1,200 h.p., including provision for tests under high altitude conditions, with variation of air pressure and temperature, for engines up to 250 h.p. With one exception there is no indication in the report of altitude tests having been made of complete engines, such as has been the case, for instance, in the American altitude laboratory, efforts at Farnborough having apparently been confined chiefly to tests on single cylinders. The exception is a series of tests on a Liberty engine fitted with a Rateau supercharger, which has given ground level power under conditions corresponding to an altitude of 15,000 ft.

Of other work in connection with engines, mention may be made of development work on air-cooled cylinders. Here a very considerable amount has been done, with apparently good results, as the following quotation from the report indicates:—

Air-cooled Cylinders.—The development work on air-cooled cylinders has made good progress, and present-day air-cooled cylinders are capable of performing equally well under the same full-load conditions as the most efficient water-cooled types. The improvements, principally to cylinder cooling fins and shape of combustion chamber, have permitted the increase of the compression ratio from 4.6 to 5.3, with a gain in power and reduction in fuel consumption.

The cylinders are of composite construction with aluminium head cast on to a steel barrel, and a series of tests has been carried out to determine the most satisfactory shape of key joint between barrel and head to give unity and gas tightness.

Cylinders designed and made at the R.A.E. of the same bore and stroke as the Dragonfly type were mounted on a Dragonfly crankcase, and the power was increased from 295 b.h.p. at 1,650 r.p.m. to 350 b.h.p. at the same speed, at the same time decreasing the consumption from 0.64 lb. to 0.54 lb. per b.h.p. hour. The added weight was about 40 lbs. Other cylinders were made to replace those of the Wasp engine, keeping the bore and stroke the same, and in addition modifications were made to improve the fuel distribution. The power was in this case increased from 150 b.h.p. to 185 b.h.p. at 1,800 r.p.m., the consumption being at the same time reduced from 0.59 lb. to 0.49 lb. per b.h.p. hour. The added weight was 27 lbs.

In order to obtain the performance of large air-cooled cylinders an 8-in. bore and 10-in. stroke cylinder has been made and is now under test. Much trouble is being experienced with the valve gear. An 8-in. by 11-in. water-cooled cylinder has also been made and is under test. This cylinder has been delayed by valve gear trouble, the design of which for large high-speed engines requires careful consideration.

"A cylinder with aluminium head secured to the barrel by bolts and nuts has been experimented with and may possibly give results almost equal to those obtained from a cast on head cylinder."

In the matter of wind tunnel tests a great deal of work has been done, not only experiments with the usual parts and models of machines, but also on the wind tunnels themselves, and air speeds as high as 130 ft./sec. have been attained in one of the channels at the R.A.E. If it become possible to use such high speeds, the accurate determination of scale effects should be within measurable distance of accomplishment. Perhaps one of the most useful spheres of research undertaken is that on stability of aeroplanes. It has been arranged that a complete model of any new type of aeroplane shall be submitted to the N.P.L. for a thorough investigation of its stability, and one of the 7 ft. wind channels has been set aside for this work. This work will necessarily be of a lengthy character, but it is hoped that the results will be of general interest, especially in conjunction with full-scale tests of the machines in flight, suitable methods of which have now been developed.

It is gratifying to find that a number of tests have been made on high-lift wings, among others that of the Fokker machines, to which the following reference is made in the report:—

Aeroplane Wings.—Tests on wing sections still form a portion of wind channel work. An advance in the design of aeroplane wings has lately been made possible by the introduction of a new feature which renders possible the conversion of a high speed low-lift wing into a high-lift wing. The experiments on this invention are still of a preliminary nature, but sufficient data are available to show that the speed range of aeroplanes in the near future will be very greatly increased.

Experiment has continued on a number of wing sections of the fixed camber type. The Fokker thick aerofoil section has been tested and gave a maximum lift coefficient of 0.765 compared with 0.845 for the R.A.F. 19 section, and similar values for some of the American high-lift wings, such as U.S.A.T.S. 5. Two Bristol aerofoils with characteristics similar to the section R.A.F. 15, together with modifications of the last-named, have been tested, but they provide no new developments; similar remarks apply to the biplane test of R.A.F. 19, with maximum lift coefficient of 0.797. In considering these and other sections, attention may, however, be drawn to a method of comparing the relative merits of various aerofoil sections based on the principle of plotting horse power necessary against forward speed.

Of greater interest is the result of an investigation on the performance of a wing of variable camber. The form of the section is variable by means of a narrow front flap and a fairly wide rear flap, both being moved simultaneously so that the new chord is always parallel to the original. A strut-shaped section was taken and the resulting aerofoil was as good as R.A.F. 15. Similar experiments on a better primary, such as R.A.F. 15, promise a greatly increased performance; these are now in hand. The form of cambered wing here tested had not the disadvantage of a large change in the position of the centre of pressure such as is usually associated with the introduction of flaps on the wings."

While not denying the advantages of variable camber, with both leading and trailing edges variable, we would mention that several investigators have found that the stresses set up in such a wing may be very considerable, and that this should be kept in mind when contemplating its aerodynamic advantages.

There is a delightful bit of *naïveté* in the report dealing with wind tunnel tests on a model of the ill-fated Tarrant triplane "Tabor." "They" (the experiments), the report states, "show that with the machine taxi-ing at the observed attitude and speed at the time of the accident, the effect of the upper airscrews, when suddenly switched on, would be to cause the machine to turn over on its nose if the controls be not moved." The solemnity of the announcement of this self-evident fact is most amusing.

It was officially stated on Monday that Mackey had been released and had reported at Buttevant Barracks. Residents were warned that unless Mackey was released reprisals would take place. On Saturday some traders in Kilfinane received notice, it is reported, that their houses were to be destroyed.

No details of Mackey's experiences during captivity are forthcoming.

Air-Trouble in Ireland

AN official note from Dublin Castle states that on February 11 Aeroplane 187 made a forced landing at Ballinamona, near Kilfinane, county Limerick, at 4 p.m. The pilot, whose name was Moreton, went for assistance, leaving his observer, Mackey, by the machine. During his absence a number of armed men attacked the machine, and when the pilot returned he found his comrade missing and the machine in flames.

ROYAL AERONAUTICAL SOCIETY NOTICES



Meetings.—Sir Joseph Petavel, M.B.E., will preside at Mr. Handley Page's lecture on "The Handley Page Wing," which is to commence at 5.30 p.m. on Thursday, February 17, in the Theatre of the Royal Society of Arts, John Street, Adelphi.

The following meeting will take place on Thursday, March 3, commencing at 5 p.m., when two papers will be read: "Airship Fabrics," by Mr. J. W. W. Dyer, and

"Parachutes," by Maj. Orde Lees, O.B.E., A.F.C. Air-Commodore E. M. Maitland, C.M.G., D.S.O., A.F.C., will be in the chair.

Olympia Efficiency Exhibition.—At the request of the Higher Production Council it has been arranged for Mr. White Smith to read a paper on "Commercial Aeroplane and Seaplane Transport," in the lecture hall at Olympia at 11 a.m. on Friday, February 25, to be followed by a similar paper on "Commercial Airship Transport," by Mr. C. I. R. Campbell, O.B.E., M.I.M.A. Maj. Sir John Baird, Bart., C.M.G., D.S.O., M.P., will take the chair.

Manchester Society of Engineers.—At the request of the

Manchester Society of Engineers it has been arranged for the chairman (Air-Commodore H. R. M. Brooke-Popham, C.B., C.M.G., D.S.O., A.F.C.) to read a paper on "Some Problems in the Design and Operation of Aircraft," before the members of that body at 7 p.m. on Wednesday evening, March 2.

Donation.—The Council desire gratefully to acknowledge the receipt from Mr. Alma Baker, Honorary Member, of a presentation copy of his "Souvenir of the Australian and Malaya Battleplanes, 1914-1918," which has been prepared as a record of the efforts made to assist the Home Government during the War by presenting aeroplanes to the Royal Flying Corps and Royal Air Force, as a result of which sufficient money was subscribed to purchase 94 aeroplanes.

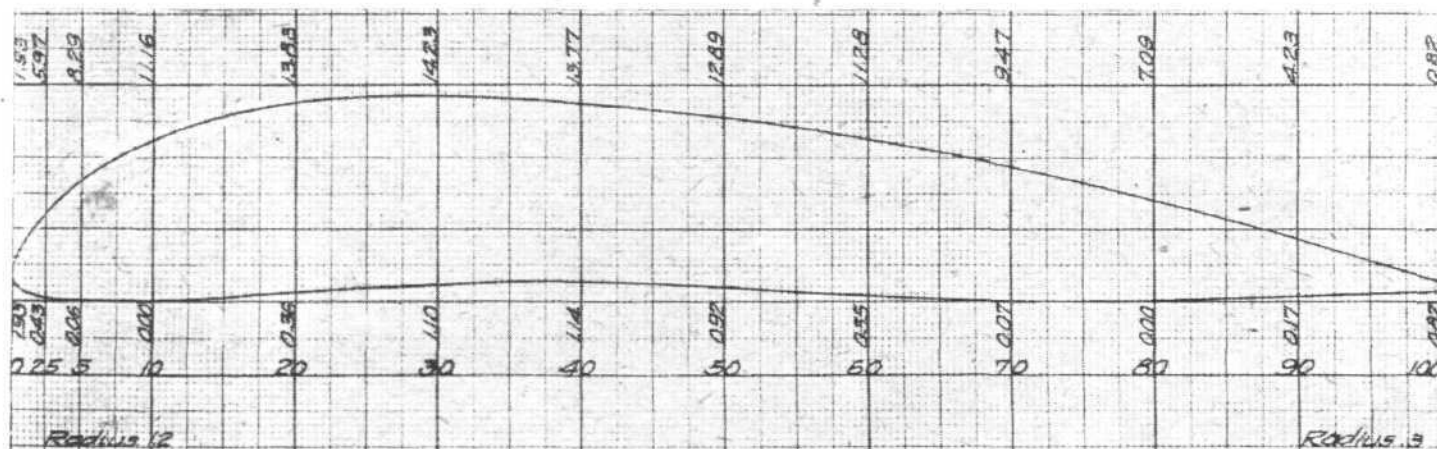
Journal.—Copies of the following numbers of the "Journal" are urgently required, and the Secretary would be grateful if any member who does not desire to retain his copies for filing purposes would be kind enough to return them, as these numbers are quite out of print: January, March, April and June, 1920.

W. LOCKWOOD MARSH,
Secretary

A NEW AMERICAN HIGH-LIFT WING The Glenn Martin No. 2

We have received from the Glenn Martin Company the accompanying dimensioned section of a new wing recently tested by them. In the covering letter some rather bold claims are made for this wing, such as "the highest-lift wing in the world," etc. It is mentioned, however, that a model 18 ins. by 3 ins. lifted, in the wind tunnel, a load of $4\frac{2}{3}$ lbs. per sq. ft. at 30 m.p.h. In working out the lift

for any wing except the Parker Variable Camber aerofoil. This does not tell one very much, except that the best L/D of the Parker variable section, when tested as a stream line section, was 16.84, and that apparently no claim is made by the Glenn Martin Company to have improved upon this figure. In the absence of complete data, one can only say that the Glenn Martin wing section No. 2 is a high-lift



THE NEW GLENN MARTIN HIGH-LIFT WING No. 2: The ordinates given are percentage of the chord

coefficient corresponding to this lift and speed, one arrives at a maximum lift coefficient of 1.016 (absolute), which, although very good, is certainly not the highest lift attained. The Handley Page wing, for instance, gives greater lift than that. Among other claims made for the new Glenn Martin wing is that at high speeds it is from 10 to 15 per cent. more efficient than the highest value ever recorded

wing with a maximum K_L of about 1, and a maximum L/D of in the neighbourhood of 16. This is certainly quite good, but nothing to get wildly excited about. The wing should be quite a useful one, having plenty of room for deep spars, and should be suitable for machines in which a minimum of external bracing is desired. It is scarcely deep enough for a cantilever wing to be economically built.

The Coupe Michelin for Aircraft

In response to a query raised by the Aero Club of Italy, the A.C. de France announces that the competition is open equally for waterplanes. These in their class will be entitled to compete in any of the countries in the Federation. Each country has therefore to arrange for both land and water machines to compete over their respective elements over a 3,000 kilometre course, with a minimum number of fifteen alightings, the essence of this "commercial" machine contest being the best speed over the 3,000 kilometres.

Two Air Events for Brescia

In September next, when the big Brescia automobile meeting takes place, two flying events have been arranged to take place simultaneously with the motor racing. The first will be the Grand Prix d'Aviation, which will be run at the same time as the Grand Prix d'Italie for motors, the course in each case being the same, over a circuit of 18 kilometres at Montichiari. A second aviation race for

touring aeroplanes only will take place simultaneously with the voiturette racing class event, in each case the dual events having, of course, no relationship to each other.

Cambridge University Aeronautical Society

In amplification of his lecture on "Parachutes" before the Cambridge University Aeronautical Society on January 19, Maj. T. Orde Lees, O.B.E., A.F.C., gave a demonstration of the "Guardian Angel" parachute on the Society's landing-ground at Girton on Thursday, February 10. Before about 300 members and friends who inspected the attachments of the parachute, and some 5,000 spectators, two jumps were made from a De. H.9 piloted by Mr. F. J. Ortweiler, M.C. First, Maj. Orde Lees made a descent from a height of 900 ft., and after another parachute had been fitted to the machine, Mr. G. I. Taylor, M.A., F.R.S., of Trinity College, an honorary member of the Society, made a descent from 1,000 ft. Although Mr. Taylor has himself designed a parachute which gives great promise, this was the first time he had essayed an actual descent.

AIRISMS FROM THE FOUR WINDS.

FRENCH Air Attachés are to be appointed in London, Washington, Rome, Madrid, Bucharest, Tokyo, Pekin and Buenos Ayres. Presently we will probably be appointing one in Paris.

RUNNING a special air-service between London and Birmingham during the British Industries Fair is a move in the right direction and distinctly encouraging. It is due to a joint arrangement between the *Mercantile Guardian* and the S. Instone Company, whose active air-work is to be welcomed again. The aeroplane to be used is the Vimy-Rolls-Royce limousine de luxe, with seating capacity for fifteen passengers, and the journey will occupy about an hour. The first flight from London to Birmingham will take place next Monday and on successive days alternately.

THERE is nothing like ocular demonstration to push home a lesson. So Major Orde Lees last week, at Cambridge, in connection with a lecture upon parachuting, made a descent in a parachute from an aeroplane at Girton, before members of the Cambridge University Aeronautical Society. When the machine, an Airco D.H.9, was at an altitude of 800 ft., Major Lees dived, and, making a graceful descent, landed safely in a field.

OWING to the United States still being nominally at war with Germany, a quandary has arisen in connection with the regulations governing the Gordon Bennett Cup for balloons, under discussion by the F.A.I. in Paris. The point is what will happen should any American competitors inadvertently alight on German soil, a question we raised a good many months ago when an official U.S. aeroplane journey was being carried out, involving the passing over German territory. It might be awkward if the pilot did not happen to be a hyphenated U.S. subject.

THOSE experiments upon the ex-German battleship "Baden" with submarines and aircraft should prove extremely interesting, although under the "arranged" programme circumstances not necessarily convincing. That some of the attacking methods were effective is hardly to be doubted, as the "Baden" at the moment is at the bottom of the sea. For the official views we suppose we must patiently "wait and see."

MORE railway stations are displaying their names upon

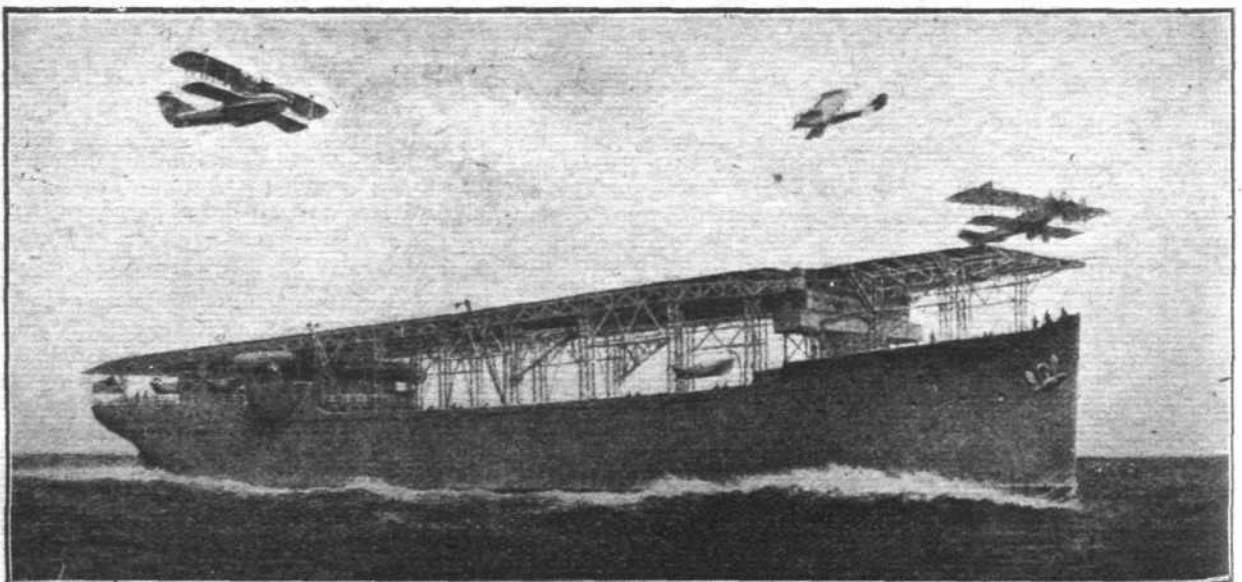
the roof besides Brentwood, recently mentioned, for the benefit of air-traffic. Basingstoke, Reading and Hertford are also in line in this respect, whilst Aylesbury and Slough follow next best with their names in large chalk letters on lands in close proximity to the railway station.

Is the helicopter to make good this year? If the Marquis de Pescara and Capitaine Hugué are right, it looks as if this highly important problem should be advanced from its present very embryo stage. The Marquis is so confident as to prophesy that de Romanet, who is trying out the experiments with the Pescara machine, will be a competitor for the Michelin Cup. We sincerely trust he is right. Capitaine Hugué, who has the most intimate connection with this same machine, is of firm opinion that having regard to the results of the most recent trials, the helicopter will take part in a "closed circuit" event this year. It is no longer, he affirms, a matter of being able to fly with the new machine, but one of being able to control the thrust of the air-screws, the general control when in the air, and obtaining good stability.

AN original departure is to be made in America by the Lawson Airplane Co. when it starts its Chicago-New York passenger and mail service in May. Passengers are to be charged by their *avoids*. But over-fed profiteers need not think this is likely to rule them out, as Mr. Lawson announces that anything up to 4,000 pounds can be accepted. So long as the charge for the minimum weight man does not start at the maximum charge hitherto scheduled, we don't see that there should be much to complain about in the arrangement.

IN spite of the great efficiency of the U.S. air-post which has been in operation for a year or more past, at one time it looked as if the Senate would turn down its continuance during the current year. But fortunately Americans are too discerning, and are able to table a long view. So it comes about that the Senate Post Office Committee has restored the air mail appropriation in the Post Office Bill, and thus will America progress in air-mail experience still further, whilst we this side look like standing still. It's a certain consolation that the American figures will be available to help stir up somebody in our lethargic Government.

An American Aircraft Carrier: The U.S. Naval Collier, "Jupiter," is receiving extensive alterations at the Navy Yard, and will reappear shortly as U.S.N. Aircraft Carrier "Langley." As may be seen here, the "Langley" will have a flying deck, 56 ft. above water level, extending about 525 ft. from bow to stern, and 65 ft. maximum width. Accommodation is provided in the hull for 34 machines, viz.:—12 single-seater pursuit, 12 two-seater "spotters," 4 torpedo 'planes, and 6 seaplanes. The "Langley" is 542 ft. overall length, displacement 12,700 tons, speed 15 knots, and carries four 5-in. guns.



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CAMBRIDGE UNIVERSITY AERONAUTICAL SOCIETY

(OFFICIAL ORGAN, "FLIGHT")

ON January 19, 1921, a paper was read by Major Orde Lees, O.B.E., A.F.C., entitled

"Positive-Opening Parachutes"

The lecturer referred to the first historic mentioning of the parachute by that great Italian, Leonardi da Vinci, who, he said, had completely anticipated the modern parachute. He then mentioned the many inventions relating to parachutes, and pointed out how a great number of these were doomed to failure owing to the imperfect understanding by the inventors of the fundamental principles involved. The chief reason for so many of these inventions being ineffective was insufficient area to check the fall to any appreciable extent. "The plane projection," the lecturer said, "of the standard 28 ft. diameter parachute is much less than the actual area of the silk, being contracted to 18 or 20 ft. with a 160 lb. load." Major Orde Lees then referred to the different ways in which parachutes open, according to the manner of packing. Progressive opening is good, while "explosive" opening is bad, imposing great stresses on the fabric and carrying with it the danger of splitting the parachute.

The general belief, the lecturer said, that one of the greatest dangers of parachuting is failure to open, is fallacious. By far the greatest danger is in landing or, in the case of a jump from an aeroplane, getting entangled in parts of the machine. The advantage of the positive-opening type of parachute is not so much that it reduces the very remote chance of failure to open, but that it can be depended upon to open after a short drop. He then mentioned that parachutes of the non-positive-opening type, although rarely failing to open, have been known to fall considerable distances before opening, and that for real useful life-saving properties jumps might frequently have to be made from heights below 1,000 ft. While a short "free fall" is desirable for this reason, the really important advantage of the positive-opening type of parachute is that it makes the length of free fall a constant. One knows where one is. On the other hand, if the parachute opens too soon, there is greater danger of it becoming entangled in the tail of the aeroplane.

Major Orde Lees related a number of remarkable parachute drops, in some of which free falls of many hundreds of feet were made without injury to the occupant. As an instance of extraordinary determination and pluck, he mentioned a parachute descent by Miss Sylvia Boyden at Copenhagen on October 3, 1920. The wind was blowing at a velocity of 60 m.p.h., and the young lady jumped from a height of 1,000 ft. The parachute drifted 9,300 ft., and by the most amazing luck she just passed over a lake and landed on its farther shore by letting go when still 15 ft. from the ground. "As a matter of fact," the lecturer said, "she landed with exactly the same force as if she had hurled herself off the roof of an express train going at full speed. You will admit that this young lady of 21 has rare pluck. Several friends tried to dissuade her, but she insisted upon doing it because there were 10,000 people waiting to see it, and she said she wasn't going to let them think that an English girl was afraid of a little thing like that. The 'little thing' was certainly the most daring parachute descent ever undertaken."

In conclusion, the lecturer referred to three main types of encased parachutes. The normal type is contained in a casing and is dragged over an aluminium disc by the relative motion between the falling aviator and the machine. It is therefore positively extended.

The second type referred to is the knapsack parachute. In this the container is attached to the aviator's person, and the parachute is extracted automatically, either by a cord attached to the aeroplane or by a miniature parachute, liberated at the moment of, or shortly after, jumping. "In some makes of this type," the lecturer said, "it is necessary for the aviator to pull a ring on his chest after jumping, to rip open the case containing the parachute, which puts it out of court for passengers at once. On the other hand, this type of parachute has the undoubted merit of being far less likely to get foul of the aeroplane than other types, especially in spins and nose dives, though it must be remembered that in a spin even the smallest machine takes as much as three to five seconds to make a complete revolution, and that that is time enough for any type of parachute to function and get clear."

"The third class, for which great hopes are entertained, has never yet materialised. In it lies a chance for inventors. It relates to a type termed soaring parachutes, where the

parachute is shot upwards above the machine, opens, and extracts the man bodily from the aeroplane.

"The provision of parachutes will not, of course, increase or decrease accidents, but there is a certain amount of truth in the assertion that the provision of life-saving devices, and especially their visible and tangible exhibition, will have the effect of emphasising the fact that accidents do occur. It is merely a question of development and of educating the public as to what is best for it. If lifebelts and lifeboats on ships ever had the effect of deterring passengers, certainly the exact opposite is now the case. Passengers demand that all ships shall have adequate life-saving appliances, and, in time, it is equally certain that the same must, and will, in even greater degree, be the case with aerial transport. Unless aerial transport is going to die out altogether, which is unthinkable, passengers will, sooner or later, refuse to travel by aircraft unless they are equipped with proved life-saving appliances."

"Some Problems in Aeronautical Research"

Under this title a paper was read before the Society on January 26, 1921, by Air Commodore H. R. M. Brooke-Popham, C.B., C.M.G., D.S.O., A.F.C. Unfortunately, the Air Commodore's manuscript is not available at the moment, and we are therefore unable to publish extracts from it this week. We hope, however, to have an opportunity of examining the paper shortly, when we shall endeavour to deal with it in *FLIGHT*.

On February 2, 1921, a paper was read, entitled

"Some Requirements of the Modern Aeroplane,"

by Sir Richard Glazebrook, K.C.B., F.R.S., F.R.Ae.S.

The paper was mainly of an elementary character, and Sir Richard outlined the broad fundamental principles of aerodynamic and structural design, giving the fundamental formulæ for lift and drag, and mentioning the progress that has been made in the development of wing sections with a high maximum lift coefficient to give low landing speed for a heavy wing loading, referring, among others, to the new Handley Page wing in which the maximum lift coefficient is very much greater than that of any known ordinary aerofoil. Sir Richard also drew attention to the importance of engine reliability, and pointed out that of almost equal importance is light weight per horse-power, as the engine, fuel and oil form a great proportion of the total load carried by the machine, and consequently the lighter these are, the more lift is available for carrying useful load.

While, thus, it is important to keep the engine and structure weight as small as possible, the machine must be amply strong for safety, and Sir Richard referred to such matters as factors of safety and load factors, and pointed out the different attitudes and manœuvres of an aeroplane that have to be taken into account when making stress calculations. He also dealt in some detail with the design and use of accelerometers for determining the forces set up in a machine executing various manœuvres such as looping and flattening out after a dive. If it were possible for a machine to be dived at twice its normal speed, and if the pilot could flatten out instantaneously without any change of speed, the forces on the aeroplane would be increased twelve to sixteen times, and the machine would have to be twelve to sixteen times as strong as for horizontal flight. In practice this cannot, of course, happen, as the aeroplane will not be diving at twice its normal speed, nor can the pilot change its motion instantaneously, but still, this theoretical consideration shows that quite extraordinary stresses may be met with during rapid manœuvres.

While dealing with the findings of the Committee on Load Factors, Sir Richard mentioned that a stable machine is allowed a smaller load factor than an unstable one, and referred to the difference of opinion which exists among pilots as to whether a stable or an unstable machine is to be preferred for military work. "For commercial aircraft," Sir Richard said, "there can be no doubt. A stable aeroplane in which the pilot for a time loses control from any cause, flies on; if the engine stops it puts its nose down and glides gradually to earth and may make a safe landing; the unstable machine gets into a spin and crashes." One condition in which the unstable machine may score is in the case of landing. When near the stalling speed, the stable machine will try to get its nose down so as to gather speed. The pilot may have to exert considerable force to overcome this tendency, whereas the unstable machine may be coaxed into keeping on an even

keel and dropping gradually to earth. Still, the advantages of stability far outweigh this, and commercial aeroplanes, the lecturer said, must be stable.

Sir Richard then referred to the work of Professor Bryan and of Professor Bairstow, on stability, and outlined the conditions for longitudinal and lateral stability. In addition to the usual reasons for making an aeroplane longitudinally stable, Sir Richard mentioned the well-known fact that a machine which is longitudinally unstable usually has a stable position when flying on its back, and that, therefore, if through any cause it gets into this position, it may be impossible to right it.

With regard to controllability, Sir Richard called attention to the fact that when taking off and alighting, an aeroplane

is generally somewhere near its stalling speed, that is to say, the air forces on the controls are small, just at a time when they are most urgently required to be powerful. "Some method," Sir Richard said, "of controlling the machine at low speeds is one of the pressing necessities of the time; it is at present an earnest subject of research in aeronautical laboratories."

Sir Richard also referred to the problems of navigation, and mention was made of the various instruments in use, such as bubble sextant, compass, turn indicator, etc., as well as of the pressing need for a device which will tell the pilot when he is close to the ground. Such an instrument, combined with means of control at low speeds, are among the most urgent requirements of modern aircraft.

THE ROYAL AIR FORCE

London Gazette, February 8

Permanent Commissions

The name of Flight-Lieut. David Segismund Don is as now described and not as in *Gazette*, Oct. 28, 1919.

Flying Branch

Capt. H. A. Page relinquishes his temp. commn. on appt. to T.F., and is permitted to retain his rank. Lieut. R. L. Hall relinquishes his temp. commn. on appt. to T.F. Res., and is permitted to retain his rank.

The following Sec. Lieuts. (Hon. Lieuts.) relinquish their temp. commns. on appt. to T.F. Res., and are permitted to retain rank of Lieut.:—J. C. Bowie, R. Auld.

Lieut. J. G. Edenborough (Sec. Lieut., S. Lanes R.), relinquishes his temp. commn. on return to Army duty; June 16, 1918.

Sec. Lieut. S. H. Mabbott relinquishes his temp. commn., and is permitted to retain his rank.

Lieuts. transfd. to the Unemployed List.—C. H. Archer; Feb. 1, 1919. C. E. Mitchell; April 8, 1919. T. G. Sifton; May 31, 1919. F. C. Mair; June 20, 1919. W. Aitken; Sept. 27, 1919.

The name of Flying Officer John Leslie Fitzmaurice Creighton is as now described, and not as *Gazette*, Feb. 1.

Administrative Branch

Lieut. St. G. C. Payzant is transfd. to Unemployed List; Feb. 25, 1919. *Gazette*, April 25, 1919, relating to Sec. Lieut. C. S. Dunbar is cancelled. *Gazette*, Feb. 14, 1919, appointing Lieut. and Qmr. W. White (Spec. List) to a temp. commn. is cancelled.

Technical Branch

Sec. Lieut. A. E. Curtis (Cat. B) to be Lieut., without pay and allowances; April 19, 1919 (substituted for *Gazette*, Nov. 9, 1920); (since demobilised). Capt. J. R. H. Whiston relinquishes his temp. commn. on appt. to T.F. Res., and is permitted to retain his rank. Lieut. S. H. Pickles is transfd. to Unemployed List; May 28, 1919.

Chaplains' Branch.—The Rev. D. F. Blackburn is granted a temp. commn. as Chaplain, with relative rank of Capt.; April 3, 1919. (*Gazette*, June 1, 1920, to stand).

Memoranda

Four Cadets are granted hon. commns. as Sec. Lieuts., with effect from date of their demobilisation.

London Gazette, February 11

Permanent Commissions

Flight Lieut. R. M. Drummond, D.S.O., M.C., is placed upon half-pay, Scale B, from Aug. 16, 1920, to Jan. 13.

Short Service Commissions

Medical Branch

The names of Flight Lieut. Ceri McColm Jones are as now described, and not as *Gazette*, Feb. 4.

Chaplains' Branch

The Rev. D. H. Gillan, M.A., B.D., is granted the relative rank of Group Capt. for the purposes of prec. discipline, and administration.

Promotions

The christian names of Flying Offr. Hugh Granville White are as now described, and not as *Gazette*, Dec. 31, 1920.

Flying Branch

Sec. Lieut. (Hon. Lieut.) R. D. de Pass relinquishes his temp. commn. on appointment to a temporary commn. in the Indian Army. Lieut. P. Duggan relinquishes his temp. commn. on ceasing to be employed; June 29, 1918.

The following are transfd. to the Unemployed List.—Lieut. S. Van V. Hiscot; Feb. 2, 1919. Lieut. E. F. Stephenson; Feb. 3, 1919. Sec. Lieut. E. W. Johnson; Feb. 10, 1919. Sec. Lieut. G. W. Taylor; March 4, 1919. Lieut. J. T. Quick; Oct. 11, 1919 (substituted for *Gazette*, Oct. 14, 1919).

Gazette, July 11, 1919, relating to Sec. Lieut. R. P. Stockton, is cancelled (*Gazette*, March 21, 1919, stands).

Administrative Branch

Capt. C. G. Burge, O.B.E., to be Capt., from Flying A.; June 2, 1919. Sec. Lieut. N. F. Cooke relinquishes his temp. commn., and is permitted to retain his rank. Sec. Lieut. R. Dinwiddie is transfd. to the Unemployed List; Feb. 1, 1919.

Technical Branch

Flying Offr. H. H. Kilby relinquishes his temp. commn. on return to Army duty; March 1, 1920. Lieut. (Hon. Capt.) W. H. Stronge is transfd. to the Unemployed List; Jan. 11, 1919.

Memoranda

One Cadet and one Overseas Cadet are granted Hon. Commns. as Sec. Lieuts., with effect from date of demobilisation.

Lieut. R. R. Frecheville is transfd. from S.O. to the Unemployed List; Jan. 17, 1919.

The announcement of the award of the Distinguished Flying Cross to Major C. Baker, Australian Flying Corps, in *Gazette* of June 3, 1919, is cancelled.

A Really Small Aeroplane

THE "scooter of the air" seems to be about to become an accomplished fact. A young French designer, M. Louis Goubert, has just completed the designs for a very small machine, which is to be driven by an engine of 10 h.p. only. The machine is to be a tractor, with the pilot entirely enclosed in the fuselage, which will be provided with windows. The wing loading is to be 10 kilograms per square metre (about 2 lbs./sq. ft.) and the maximum speed is estimated at 50 m.p.h., with a landing speed of about 20 m.p.h. A model of the machine is, it is stated, to be tested by M. Eiffel before the actual machine is built.

And a Really Large One

FROM America it is reported that the Naval Department has ordered two very large triplane seaplanes, to be equipped with nine Liberty engines. These machines are said to be designed by Gallaudet and Richardson, and will have a wing span of about 140 ft., with a wing area of 6,000 sq. ft. The total weight is to be in the neighbourhood of 30 tons. The range is expected to be about 2,000 miles.

Italy is Also Building Huge Machines

FROM Italy it is reported that trials are about to take place over Lake Maggiore with a new triplane of enormous dimensions. This machine is said to have eight engines. Probably the report refers to one of the new Caproni machines about which there have been rumours lately.

A New Siemens-Schuckert on the Stocks

WITH a passenger capacity of 24, a monster aeroplane, with four 600 h.p. motors, is in the making at the Siemens-Schuckert works in Germany.

Potez on Metal Construction

A NEW side-by-side dual-control school machine, constructed entirely of metal, is announced.

Charges at the Berlin Johannisthal Aerodrome

PRESENT fees for aircraft using the Johannisthal Aerodrome are as follows:—

1. Landing, 50 M.; starting, 50 M.
2. Assistance: (a) Personnel, including use of tools, at prevailing local rates with 100 per cent. increase for general expenses and 50 per cent. for workshop expenses. (b) Supply of material: current prices with increase of 50 per cent. (c) Supply of fuel: including filling up, 2 M. per kilo. increase on the cost price.
3. Housing: (a) up to 24 hours, 40 M. per day. (b) In excess of 24 hours, 40 M. per day. (c) Monthly hire, 800 M.

A New Belgian Aerodrome

A COMPANY has been formed for the construction of an aerodrome at Le Zoute, Knocke-sur-Mer. It is stated that the aerodrome is to be used for civil aviation, but not by the military authorities, except in case of necessity.

NOTICES TO AIRMEN

Signposts for Airmen

1. With reference to Notice to Airmen No. 4 of 1920, the names of the following Railway Stations have also been painted in large white letters on the roofs:—Basingstoke (L. and S.W. Railway; Reading (G.W. Railway); Brentwood (G.E. Railway), and Hertford (G.E. Railway).

2. The following names have also been marked in large chalk letters on plots of land adjacent to the stations:—Aylesbury (Met. and G.C. Railway) and Slough (G.W. Railway).

3. Due notification will be given if other railway stations are marked. (No. 15 of 1921.)

Aerodromes for Civil Use: Amendment of Conditions for Use of R.A.F. Stations

NOTICE to Airmen No. 1 of 1921 is amended as follows:—

1. The aerodromes in Section (a) *Permanent Service Stations* and Section (b) *Stations temporarily retained for Service purposes*

of List B (*Aerodromes available for civil machines in emergency only*) may be used, until further notice, in addition to cases of real emergency:—

(a) For refuelling in the course of journeys where no civil facilities exist.

(b) For landing of passengers proceeding to a destination near the aerodrome concerned.

2. It should be clearly understood that no guarantee can be given that any R.A.F. transport will be available, or that the machine can be housed in such cases.

3. Where possible notice of intention to use any such aerodrome should be given in advance to the officer commanding.

4. Aerodromes which are within a prohibited area (e.g., Gosport) are excluded from the terms of this notice. (No. 16 of 1921.)

**The A.M. Acquire "The Silver Streak"**

LAST week the Air Ministry acquired the Siddeley "Puma"-engined Short "Silver Streak" all-metal aeroplane, which our readers will remember at the last Olympia Aero Show. On her journey to the air station she maintained a speed of about 125 m.p.h.

A French Inspector-General of Military Aviation

It is notified that Gen. Fayolle has been appointed Inspector-General for Military Aeronautics in France. He was a very active leader during the War, and apparently the appointment is warmly welcomed in France.

France Acquires Valuable Concessions

ACCORDING to a Paris report, the Hungarian Government have granted a postal monopoly to France over their territory for an air line which is to be run between Paris, Strasbourg, Prague, Vienna, Budapest, Belgrade, Bucharest and Constantinople. The Hungarian Government have undertaken to instal landing facilities at Budapest, and the air line will be run by the Franco-Rumanian Company which already controls the Paris-Strasbourg-Prague-Warsaw air line. M. de Fleurieu, who had considerable war experience of air matters, and is the moving spirit in this enterprise, hopes also to conclude similar arrangements with the Austrian and Serbian Governments, he having already obtained similar concessions from the Rumanian, Turkish and Czechoslovakian authorities. Although the full programme will not be working until 1922, the scheme will be partly in operation before the end of 1921. Subject to there being no serious hitch, it looks as if our French friends have secured a very valuable monopoly and start in connection with the exploitation of the Central European airway en route for India and the East.

The Engines for the "Titania"

IN view of the statement published by certain daily newspapers, that the huge Fairey "Titania" flying-boat is to be fitted with two of the new Napier "Cubs," we have been requested to state that this is incorrect, and that the "Titania" and sister boats will be fitted, as originally designed, with four Rolls-Royce "Condor" engines of 600 h.p. each. By virtue of its much greater power, the Napier "Cub" is, of course, especially suitable for certain purposes, but in the design of the "Titania" power in excess of 2,000 h.p. was not the only desideratum, and it is officially stated by the Air Ministry that there is no intention of departing from the original scheme.

Belgian Congo Air Service

REPORTS from Brussels state that the first results of the air service established in Belgian Congo are proving satisfactory. Seven pilots completed the journey between Kinshassa and Gombe, the waterplanes putting up 130 k.p.h. The air route is arranged in three stages: Kinshassa-Ngombe, Ngombe-Lisala, Lisala-Stanleyville. This journey by boat takes 18 days upstream and 12 days on the return trip.

Round-the-World Aerial Derby

FIRST entries are announced in this "race" under the auspices of the A.C. of America. As the rules and regulations governing the event are still to be enacted and agreed upon by the F.A.I., it may be that some of the first-entry sports will find it best to go out when these are available. Amongst the eight entrants are two from this country. The list comprises: (1) International Navigation Co., St. Louis (per C. J. Couterman); (2) Umberto Goio, Panama; (3) W. Mann, Bombay, India; (4) Etienne Poulet, Paris; (5) Hon. H. Burton Lewis, Lieut. R.A.F., London; (6) Western Airplane

Syndicate, Cincinnati, O. (per M. M. Hull); (7) H. W. Hoyt, Lieut. R.A.F., Howden, England; (8) G. Raymond Richman, Camden, N.J.

Canada Acquires Ten U.S. Flying-Boats

MR. REDDEN, President of the Aeromarine Engineering and Sales Co., who are dealing with surplus aircraft and engines from the U.S. Navy Department, states that the Canadian Government has acquired ten Navy flying-boats, which are to be utilised in forest patrol and in connection with the Canadian North-West Mounted Police.

Danish 1921 Air Traffic Plans

ACCORDING to Director Wulff of the Dansk Luftfartselskab the following air routes will probably be started presently: Copenhagen-Warnemunde; Copenhagen-Hamburg-Amsterdam-London. The time-table will be revised, ensuring a fast service, and there will be two services in either direction daily, whilst the fares are to be lowered in all cases. For provincial town work in Denmark a series of flights for passenger transport are under organisation by the Dansk Luftrederi, the same company planning an air line from Copenhagen to Basle.

An Aerodrome for Algiers

A PROMISING undertaking is in course of materialising in connection with the creation of a commercial aircraft base at Maison Blanche, about 11 miles from Algiers. A company has acquired there 130 hectares of land for the purpose, and it is stated, that a sum of 43 million francs has been provided for laying out the landing-ground, hangars, buildings, etc. By way of a start, two of the Zeppelins surrendered by Germany are said to have been ceded to this company, and are to proceed to the aerodrome under their own power.

How Spain Goes to Work

A SPANISH aeronautical mission under Eng.-Capt. José Berahger has been investigating matters in Rome under the guidance of Signor Ferrarin, instructor at the Madrid military aerodrome. So that his pupils may be thoroughly acquainted with Italian machines, he arranged this mission for the purpose of purchasing a number of war stock machines. Six A 300 Ansaldos, some Hanriots, and one M 9 flying-boat have thus been acquired. Although the mission tried to buy several Savoia flying-boats, they found none of these machines were for disposal.

In addition the Spanish Minister of War has been authorised to purchase from Italian companies aviation material intended for a Spanish military air service in Africa, totalling to 806,000 pesetas, approximately £33,300.

Bilbao a Hydro-Aeroplane Customs Station

It is notified that the port of Bilbao has been included in the list of recognised aerial custom ports for use by hydro-aeroplanes on the Bayonne-Bilbao service.

Brazil Encourages Aviation

FOR the purpose of encouraging aviation in Brazil, the customs tariffs have been revised by a special commission, and, subject to being formally passed by the Chamber, provide that during the first three years at least of this law the importation of aeroplanes, airships and other aircraft, engines, machinery, hangars and accessories, are to be free of dues and other customs duties when the above-mentioned articles are intended for schools, camps, aerodromes, national or international aviation competitions in Brazil. In addition, transport companies will receive the same exemption provided that they are founded and worked in Brazilian territory.

SIDE-WINDS

WITH reference to the statement which has appeared in certain quarters that Messrs. Allen and Simmonds (Reading) Ltd., were shutting down last week, the firm state that it is *not* their intention to shut down, although a certain number of employes will probably be put off. This is a very different matter, and this correction should be noted accordingly. Mr. Robert Allen, managing director, writes that the report was presumably circulated to the Press by someone who has little knowledge of the firm or its doings, since in every case they are referred to as "motor engineers," ignoring the fact that they have been much longer established as piston makers and engineers for marine, locomotive and fixed engines, air compressors, pumps, etc.

Owing to the cessation of aircraft manufacture by a large number of firms who took up this class of work during the War, Messrs. Cellon (Richmond), Ltd., have found that in numerous cases supplies of Cellon dope and dope coverings, identification mark colours, brush washes, etc., have been purchased by firms outside the aircraft industry, who from time to time offer them for sale to those who are still carrying on in the industry. Messrs. Cellon, therefore, would like to point out that, while they are at all times prepared to report and advise on the use of any of their own materials which are in the hands of aircraft builders, they cannot accept any responsibility for materials purchased from outside sources.

THE Sunbeam Motor-Car Co., Ltd., have appointed Mr. C. R. Andrews as manager for their new London depot and showrooms, 12, Princes Street, Hanover Square, W. 1. Mr. Andrews has had a long and varied experience in the motor-trade, being for ten years (from 1902) with the Lancaster Motor Co., Ltd., and subsequently, until the War commenced, with the Daimler Co., Ltd. Soon after the outbreak of hostilities he joined the Royal Naval Air Service, in which he served for some time, and finally obtained the rank of Major in the Royal Air Force. On demobilisation, he joined the Sunbeam Motor-Car Co., Ltd., as manager of their Southern Service and Repair Depot at Cricklewood on its opening, in which capacity he has made himself extremely popular. Mr. Andrews carries with him to his new sphere of activity the good wishes of all who know him.

MESSRS. W. H. DORMAN AND CO., LTD., Stafford, have on exhibit at the Efficiency Exhibition, February 10-26, a rock drill working on the new principles of wave transmission, and are giving daily demonstrations of the same. It is the first time in the history of engineering that such a demonstration of this character has been possible.

PUBLICATIONS RECEIVED

The Journal of Industrial Administration. Vol. i, No. 1. January, 1921. London: Institute of Industrial Administration, 110, Victoria Street, Westminster, S.W.1. Price 1s. 6d.

Photographic Technique. By L. J. Hibbert, F.R.P.S. Pitman's Technical Primer Series. London: Sir Isaac Pitman and Sons, Ltd. Price 2s. 6d. net.

Department of Overseas Trade. General Report of the Industrial and Economic Situation in Germany in December, 1920. By J. W. F. Thelwall and C. J. Kavanagh. London: H.M. Stationery Office. Price 6d. net.

Almanach Sportif Bessonneau, 1921. Les Journées Bessonneau, 29 Rue du Louvre, Paris. Price 5 fr.

Index of Foreign and Colonial Trade Catalogues. Department of Overseas Trade, 35, Old Queen Street, Westminster, S.W. 1.

Aeronautics 1919. Fifth Annual Report. The National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

Report No. 89. Comparison of Alcolgas Aviation Fuel with Export Aviation Gasoline. National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

Report No. 90. Comparison of Hecter Fuel with Export Aviation Gasoline. National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

Report No. 94. *The Efficiency of Small Bearings in Instruments of the Type Used in Aircraft.* National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

Report No. 96. *Statistical Longitudinal Stability of Airplanes*. National Advisory Committee for Aeronautics, Navy Building, Washington, D.C., U.S.A.

To Our Readers

As we continually receive complaints from readers that they experience difficulty in obtaining their copy of FLIGHT promptly each week, we draw their attention to the subscription form which is printed on page xvi of the current issue. If this is sent, accompanied by the appropriate remittance, to the publishing offices, 36, Great Queen Street, W.C., it will ensure FLIGHT being received regularly each week upon the day of publication.

IMPORTS AND EXPORTS, 1920-1921

AEROPLANES, airships, balloons and parts thereof (not shown separately before 1910). For 1910 and 1911 figures see "FLIGHT" for January 25, 1912; for 1912 and 1913, see "FLIGHT" for January 17, 1914; for 1914, see "FLIGHT" for January 15, 1915; for 1915, see "FLIGHT" for January 13, 1916; for 1916, see "FLIGHT" for January 11, 1917; for 1917, see "FLIGHT" for January 24, 1918; for 1918, see "FLIGHT" for January 16, 1919; for 1919, see "FLIGHT" for January 22, 1920; and for 1920, see "FLIGHT" for January 13, 1921.

	Imports		Exports		Re-Exportation	
	1920.	1921.	1920.	1921.	1920.	1921.
	£	£	£	£	£	£
Jan. ...	2,323	4,459	32,752	87,128	697	2,285

AERONAUTICAL PATENT SPECIFICATIONS

The numbers in brackets are those under which the Specifications will be printed and abridged, etc.

APPLIED FOR IN 1918

Published February 17, 1921

- 9,431. CLERGET, BLIN ET CIE. Connecting rods for reciprocating engines. (157,471.)
16,855. H. E. S. HOLT. Parachutes. (157,472.)
18,630. T. M. RITCHIE. Airships of trilobe or similar section. (157,473.)

APPLIED FOR IN 1919

Published February 17, 1921

- 17,473. A. B. HOUGHTON. Automatic adjustment of lubber line of compass on aircraft. (157,488.)
19,495. C. W. HALL. Framework for aeroplanes. (130,997.)
26,108. F. H. PAGE and HANDLEY PAGE, LTD. Wings, etc. (157,567.)

APPLIED FOR IN 1920

Published February 17, 1921

- 9,261. H. E. S. HOLT. Means for training aviators in use of parachutes. (157,665.)
20,683. T. TUCHSCHERER. Aircraft shed. (148,868.)
25,219. H. FRYMAN. Signalling apparatus. (157,607.)

If you require anything pertaining to aviation, study "FLIGHT'S" Buyers' Guide and Trade Directory, which appears in our advertisement pages each week (see pages xv and xvi).

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FLIGHT

The Aircraft Engineer and Airships
36, GREAT QUEEN STREET, KINGSWAY, W.C. 2.
Telegraphic address: Truditur, Westcent, London.
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